

AVIATION WEEK

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SEPT. 11, 1950

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A YEAR



THE PANTHER U. S. Navy's Jet Fighter

Just minutes ago this GRUMMAN PANTHER took off from the deck of a carrier miles over the horizon. Now, with others of its squadron, it is ready to perform its mission. (Note rockets under wing.) Impressive speed and formidable fire-power, plus traditional Grumman ruggedness, make the turbo-jet PANTHER a highly respected member of the Navy's air arm.

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DIXIE AIR ASSOCIATES—Conveniently located near Administration Building for prompt efficient service. **FAST, DEPENDABLE SERVICE** spells real "Southern hospitality"—and that's what flyers enjoy when they land at Memphis Municipal! At this modern, efficient air terminal, Dixie Air Associates provide round-the-clock baggage and re-docking facilities—expert airwork and engine repairs by skilled, licensed mechanics—and top-quality maintenance and rebuilding service with the best aviation fuels and lubes made!

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SERVICING BUSINESS PLANES is an important part of Dixie's operation. Here Messrs. Del Miller, (right) discusses maintenance with A. W. Frederick, Merchants Calculator Distributor, Memphis.



B.F. Goodrich



How to shut up a torrent of hot air

THE AIR DUCT in the photo above carries 90-100 cu. ft. of air so hot it's heated as high as 250°F. It's used to keep the cabin warm in the C-119, Glushko's H-19, and other heavy cargo planes built by the Long Beach Plant of Douglas Aircraft.

The duct designers would not make a 10-in. surface section of non-flexible coated material so subject to damage from leaks, cracks and other heavy equipment carried by the C-119. But they had a puzzle on their hands in finding a coupling for the sections. It had to be flexible, strong, heat-resistant and permit easy removal of sections

B. F. Goodrich engineers thought Pressure Sealing Zippers—developed by BFG research—might fill the bill. You guessed they were right.

The zipper's molded rubber lips which meet all the way around the duct, provide a 100% effective seal. The zipper is extremely flexible (it's tightly wound say tight, such as square, to drape and others whose clamps won't seal). It takes the high temperatures. It resists damage. It comes right onto either fabric or metal. And it's a piece of play of zip into duct maintenance. Just zip out a damaged section, zip in a new one—

a matter of inches.

B. F. Goodrich Pressure Sealing Zippers are doing a successful job, too, on airplane doors, aircraft covers, warm, tight protective coverings and control surface seals. They are adaptable to any kind of covering, irregular shapes, and light or heavy requirements.

For help with your coupling problems, contact the Pressure Sealing Zipper engineers at The B. F. Goodrich Co., Aeronautical Division, Akron, Ohio.

B.F. Goodrich
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FOR YOUR CONTROL NEEDS... use Macwhyte cables... terminals... assemblies

Macwhyte's "B-Falques" Aircraft Cable is available in reel form, specified length or assemblies. It has uniform, minimum stretch throughout the reel which provides efficiency and economy in making assemblies, resulting in maximum service.

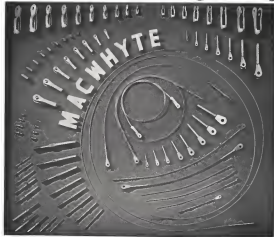
Macwhyte "Safe-Lock" Terminals may be ordered loose or attached to cable, ready for use.

Call a Macwhyte distributor or send inquiries direct to Macwhyte Company, Catalog A-1 is available on request.

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Rings, Galvanized, Stainless Steel and Monel Metal Wire Ropes



Member A.S.M.A. and A.S.A. "B-Falques" is a registered trademark



WHO'S WHERE

In the Front Office

General Electric Co. has named Robert Patton manager of manufacturing policy, succeeding Raymond E. Knecht, a vice president, who has resigned in order to rejoin the automotive industry. Patton has been manager of the machine and allied product divisions of the Apparatus Department.

Dou Stewart, who has been associated with several aviation firms in the past, has been made general manager of the search division of the Boeing Co., Lincoln, Neb., and will be in charge of work on the new jet's quick disconnect couplings.

August A. Raven has been appointed manager of United Jet Lines, taken over by H. E. Johnson, who was recently appointed to director of public relations and advertising. He joined United in 1944.

In the Sales Office

John W. C. O'Brien has been appointed U. S. sales manager of Pan American Airways since 1947 but has been Latin American sales manager. Canadian-American Division of Douglas Radio has named Arnold Rosenberg general sales manager, and R. E. Moss assistant general sales manager. Rosenberg recently joined the company. Moss recently joined J. W. Howard, who has joined sales in Denver. From industrial division in Detroit at sales. General Electric has appointed Basil Hildreth sales engineer in Chicago. John W. Thompson, formerly public relations director of the Air Transport Assn. now is vice president of United Road Productions, Washington, D. C.

Changes & Appointments

Stephen F. Koenig, director of aviation contracts of Minneapolis-St. Paul, Minn., has been elected an assistant secretary of the company. Cecil R. Jones, structural engineer at Pitkin Aircraft, has joined the staff of Century Engineering, Inc., Burbank, Calif., to head the firm's technical division in chief engineer.

Mark E. Noyes, formerly Chief Wright public relations director, now is aviation public relations representative for Boeing with headquarters in Washington, D. C. He is taking over from Carl Cleveland who is returning to Seattle after a temporary assignment in Washington. Hans Lohde has been appointed former manager of Fawcett Helicopter Corp., replacing one who has the same position at Republic Aviation.

Jack M. Shuster is the new director of flight schedules at Western Jet Lines. He has been with the airline for four years.

Franklin has named Herbert G. Rowlett engineering superintendent of the Little America division. He started with the airline on an engineering task 14 years ago.

Republic Aviation has moved into the Federal Bureau of Investigation in its new director of security. It's Alan J. Tuckey, who has been a counter-espionage specialist in case of the FBI's biggest case.

INDUSTRY OBSERVER

► Highest-paid airplane the Navy is having in its new procurement program is the seven engine-engaged long-range Lockheed P3V patrol bomber, costing \$1.25 million apiece. Douglas P3D twin jet night fighter is the most expensive Navy jet on order, costing a little over \$1 million per plane.

► Wichita's personal aircraft companies, Beech and Cessna, expect to switch the bulk of their production to military contracts within the next few months. Cessna has major subcontracts with Boeing for B-47 military components, while Beech is preparing to convert to other military defense business, and is opening a modification center at Warren, Kan., where it will install wing tanks on Douglas B-26 bombers in its first order of business.

► North American F-51 Mustangs, top fighters of World War II, are continuing to return to service in many areas. Canada has just arranged to purchase 130 of the pre-war-type fighters from USAF, while 51 unmodified Mustangs were recently assembled at Lockheed Aircraft Service, Sayville, N. Y., for long flight delivery to European countries.

► Canadian department of defense recently instructed with A. V. Roe, Ltd., to manufacture 50 Lancaster four-engine bombers for Atlantic and Pacific SACAF posts, now Canadian Air, an additional order for 800 Super jet fighters, and placed an order in England for an unspecified number of Hawker Sea Fury carrier shipboard fighters.

► Original prototype Lockheed Constellation C-69 which has been used by the manufacturer for many tests and experiments will be used to try out the modification involved in the Model 1049 Constellation with 100, longer fuselage. Navy has purchased this version under an RSO development.

► Douglas is expected to finish a Navy order soon for 11 DC-6A cargo planes, equivalent of the Lightning prototype. They are 5 ft longer in fuselage than the original DC-6. The manufacturer still has not received any commercial orders for the new version.

► Fairchild Pericles are in action in Korea in cargo drops and in delivery of supplies.

► New VIP Lockheed Constellation ordered by Gen. Douglas MacArthur, equipped with special radar and communications equipment, has been named the "SCAF" (Supreme Commander Allied Powers). MacArthur's pilot, Lt. Col. A. F. Story, took delivery of the SCAF at Burbank, last week, and was scheduled to leave immediately for Tokyo. Plans call for routine trip of the Japanese islands pointed out on the note.

► Production on the Navy's Chance Vought F4U-8 Corsair fighter, will continue for at least another year, on the basis of present orders. Navy spokesman recently informed Congress. Navy has also finally approved a recall production order for Chance Vought F4U two-seat Caduce fighter.

► Biggest single order on the list of Navy planes is for Grumman F4F fighters. McDonnell Hellcat jet fighters are second, with almost equally large order.

► Vickers Viscount 700, prototype of the production version of the four-engine transport ordered by British Overseas Airways, made its first flight Aug. 28. The Viscount 700, like the earlier Viscount 600, is powered by Rolls-Royce Darts, but it will carry 48-51 passengers rather than the 25 seated in the Viscount 600. BEA, which has ordered 26 Viscount 700s, has been given the 610 in scheduled flights to Paris and within England.



Another typical aircraft forging by Wyman-Gordon—with an over-all measurement of more than 45" this intricate alloy steel forging is a vital wing support for a modern military bomber. For applications of such importance the best technique known in forging practice is essential, assuring scale-free surfaces, close dimensional tolerances, uniform minimum weight and maximum strength—There is no substitute for Wyman-Gordon experience.

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CANBERRA ME. 2, the production version of English Electric Co.'s twin-jet bomber, has two nose positions for third crew member.

New Planes Show Increases In Performance

SAPPHIRE-POWERED METEOR (right) now Armstrong Siddeley's latest jet engines, each rated at 7200 lb. static thrust.

CONQUEST XPY 1 (below) set a new endurance record for biplane of 8 hr., 6 min. (AVIATION WEEK Sept. 4)





T-34 INSTALLATION in nose of B-37 shows small diameter of 5700-hp engine. Tailpipe below discharges down throat horizontally.

P&W Reveals Most Powerful Turboprop

American and British Turboprops

Here is a comparison of American and British turbine propeller engines currently in development which have reached flight test stage. Figures are based on manufacturers' announced data.

		Specific Fuel			Diam-
	Design	Consump-	Weight	enter	
	engine	tion	lb.	in.	
Compass	turboprop				
Pratt & Whitney	T-34	5700	0.62	3550	30
Alfcon	T-40	5500	0.43	2500	40
Alfcon	T-38	2750	0.63	1250	30
Armstrong Siddeley	Pythons	4100	0.54	3300	54
Armstrong Siddeley	Mamba	1400	0.69	700	26
Boisil	Vibronas	3000	0.65	2500	36
Rolls Royce	Dart	1400	0.57	940	36

Big transport use seen for T-34, now being flight tested.

By Alexander Vlahakis

A new propeller turbine engine, described as the most powerful of its kind now being developed but with by its maker, Pratt & Whitney division, United Aircraft Corp.

The new 5700-hp T-34 turboprop takes leadership in its class along with two other high-powered Pratt & Whitney engines. Unsurpassed by other turbine engines in their respective classes, in this respect at least, are: The piston Wasp Major B-1450, rated at 4800 hp, in its latest compound version, and the J-45 turboprop engine, rated at 4250 lb-shp (without afterburner or water injection).

■ **More Powerful.** The usually conservative manufacturer states that the T-34 is more powerful than any previously announced British or American turbo-

SKIN DESIGN of T-34 shows front of interconnecting P&W's first engine of the type



POWER is displayed in flight with T-34 pulling B-37 with all four props forward.

prop that has reached flight test stage and that it also has a higher power-to-weight ratio and a lower specific fuel consumption than any other such turboprop. (For comparative data see accompanying table.)

Effect on future engine development of the availability of the new engine may be far-reaching, in bringing additional emphasis to turbine propeller engines.

■ **Transport Conversion.** It is under study that already the engine is being pointed to power turboprop conversions of the Douglas C-124 and Boeing C-97 heavy transports, and soon may be chosen for a turboprop version of the Fairchild C-119 Porter.

It appears a reasonable assumption that the T-34 may be considered as an essential propeller replacement for the Wasp Major in virtually every airplane which uses the big piston engine. This would include such as the B-36, B-37, B-38, B-39, B-40, B-41, B-42, B-43, B-44, B-45, B-46, B-47, B-48, B-49, B-50, B-51, B-52, B-53, B-54, B-55, B-56, B-57, B-58, B-59, B-60, B-61, B-62, B-63, B-64, B-65, B-66, B-67, B-68, B-69, B-70, B-71, B-72, B-73, B-74, B-75, B-76, B-77, B-78, B-79, B-80, B-81, B-82, B-83, B-84, B-85, B-86, B-87, B-88, B-89, B-90, B-91, B-92, B-93, B-94, B-95, B-96, B-97, B-98, B-99, B-100, B-101, B-102, B-103, B-104, B-105, B-106, B-107, B-108, B-109, B-110, B-111, B-112, B-113, B-114, B-115, B-116, B-117, B-118, B-119, B-120, B-121, B-122, B-123, B-124, B-125, B-126, B-127, B-128, B-129, B-130, B-131, B-132, B-133, B-134, B-135, B-136, B-137, B-138, B-139, B-140, B-141, B-142, B-143, B-144, B-145, B-146, B-147, B-148, B-149, B-150, B-151, B-152, B-153, B-154, B-155, B-156, B-157, B-158, B-159, B-160, B-161, B-162, B-163, B-164, B-165, B-166, B-167, B-168, B-169, B-170, B-171, B-172, B-173, B-174, B-175, B-176, B-177, B-178, B-179, B-180, B-181, B-182, 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HALF A PLANE in flight is better than one plane on the ground, because the XC-120 goes for more flight while pack is unloaded.



MANIPULATING DOORS of detachable pack goes across from both the front and rear.



POD DETACHED from packplane rolls away on which stored while in flight.



TOW BAR is as usual at end of plane, extending between nose wheels.

Fairchild's Versatile Packplane



COLLAPSIBLE LADDER, extends 34 ft.

XC-120: Tomorrow's Cargo Plane?

Tractor-trailer arrangement cuts ground-handling time sharply; said to triple transport efficiency.

Hagerstown—An exciting new phase of air cargo left a lasting impression here as the Light and Ground tests of the new Fairchild XC-120 Packplane.

The first experimental tractor-trailer test of the air has its credits, but even so, it was a test. And it opens the possibility of multiple savings in ground-handling time. This plane and its detachments may well cut off a larger slice of the total transportation business for airmail than the most enthusiastic air cargo specialists previously dared hope.

With its wings, with the crowd of Hagerstown folk on the highway outside the airport and with the Army and Air Force and the civilians on the field as the XC-120 shows what it can do.

Grasping in its bulk, the Packplane looks like the oversize version of a bit belted passenger pupa or it waddles down the runway bearing on its eight-wheeled landing gear.

Dick Mason, Fairchild chief test pilot, demonstrates the plane's waddle as part of his showmanship, then nods back, the XC-120 on its rear wheels and climbs it into the air.

Back it comes for a smooth landing. And then, things happen fast. Within ten minutes, the pack is detached from the upper portion of the plane, and is towed to move on its own wheels behind a sturdy support tug.

Meanwhile Mason takes the pack—the XC-120, which now looks like a mixture of good cop and P-51, into the air for a second spectacular flight demonstration. The plane breaks ground in less than 500 ft. and climbs and dives almost like a jet fighter.

What is Mason—What does it all mean from a military cargo standpoint? May Ray Hayt, USAF group expert at MATS headquarters, has an answer, in terms of the Berlin Airlift.

"It is my opinion that the detachable cargo compartment will virtually triple the transport efficiency of aircraft, as applied to military operations. If a detachable cargo compartment version of the XC-120 type had been used during Operation Vittles, a saving of approximately 50 percent could have been effected. From a rough 'percentage,' it is figured that approximately 178 aircraft of the detachable cargo pack type, equipped with three-pack racks, would have been needed to carry the daily requirements into Berlin."

Attachment. Reasons—Four small aerial tugs on the top of the pack compartment attach into four sockets in the belly of the cabin compartment.

A single control in the cockpit releases the clutch of aerial "tugger" at all four attachment points. The pack may be dropped in flight if need be.

But when the pack is detached in a normal ground-handling operation, it is lowered by four sturdy steel cables hooked to the pack's sides. Four electric motors in the cabin compartment—two motors at the nose, and two motors at the rear—lower or raise the pack by paying out or reeling in the cables.

In ground tests, the heaviest apparatus has been hoisted to a combined weight of 56,000 lb.—detached 18,000 lb. on the front hoists and 38,000 lb. on the rear hoists—although it is calculated the maximum gross load for the pack will be 25,300 lb.

Steel wheels with low-pressure tires are quickly stowed at the four corners before it is lowered. Front wheels assist for steering and have two-brake fittings so that it can be towed from either front wheel. The ground handling wheels are placed in the pack when it is attached to the plane for flight.

Detached. Soft-A rubber tube around the top edge is inflated when the pack is attached to the crew cabin, so that a tight seal is made at the attachment point.

The pack has front and rear double clevis-hitch doors and its floor is hinged to the cabin floor. When it is attached to the plane in its normal ground position.

Cargo Space—The pack provides 1700 cu ft. of cargo space in the following dimensions: length, 8 ft., width, 11 ft., height, 15 ft. 3 in. width, (above 85 in 5.9 ft. 3 in., length, 36 ft. 9 in.)

The cargo space is convertible the same as that provided in the Fairchild C-119 Packplane, from which the XC-120 has been developed.

The Packplane is designed for a 64,000-lb. gross weight, a maximum speed of over 250 mph and a service ceiling with two crews of over 25,000 ft.

It will carry 56 litter patients, or 44 troops (normal), or 64 troops (overweight), or 20,000 lb. of cargo.

Unique. Gen-New landing gear of the Packplane are similar to those of the C-119, but two features which are placed forward of each landing gear. The forward wheels are interlocked with the main wheels by a mechanical linkage and retract into the airframe, as the main wheels retract. Another feature is the interlocking and shockless with a differential hydraulic steering or

steering, governed by a small load wheel in the cockpit. So much speed is required to cushion the gear as it retracts that it was necessary to lengthen the runway 30 ft. by setting an extra section.

The landing gear retraction is direct, developed by the Lear Corp. An emergency provision releases the shock of the electric retractors dropping the gear to full low in the down position, with a final hydrolic boost to lock them in down position. Main wheels have hydrolic boost.

Components, too. Pratt & Whitney R-4460 engines of 3210 hp turning Hamilton Standard 15-ft. diameter propellers, are similar to those used in the C-119. Outer wing panels, empennage and landing gear for the extra 10 in. sections are attached with those of the C-119.

As soon as the Packplane gets a little more data in the air, it will be the subject of a series of ground experiments in an effort to determine the full utilization of such a novel air carrier.

Parade. Drop—Dropping the pack by parachute is probably the last order of business. A little later the pack may be dropped from very low level without parachute. It is not unlikely that the lower plane may be used both at all ports will, to land and drop other objects than the original pack, perhaps a tank, or field gun in a temporary fixing to locate unit emphasis.

Drugs of various specialized pack materials, as well as food, clothing, photographic film, etc., are also in the future picture.

Fairchild now has under consideration another Packplane version which fits the pod or pack into a nose section, more nearly like that of the C-119.

What this eliminates the front clamshell door arrangement, as in the XC-120, and it is a possible use of the C-119's mechanical landing gear arrangement which has some obvious advantages over the quadricycle gear used on the XC-120.

American advantage would be in saving about 1000 lb. in weight over the XC-120 arrangement, primarily credit to the landing gear.

Radio. Test—Tests have been the subject of some previous experiments. British engineers developed a gasoline construction pack in which they prepared to drop safely in World War II.

It has been estimated that it might take as many as 17 of the 100-ft. diameter Air Force cargo chutes to lower an XC-120 pod successfully. However,

it is not unlikely that it will slow down the rate of descent, with a couple of parachutes at the ends of the pack for stability, is also being considered.

What's Ahead in Congress

► **Strategic air aid** will be strengthened, although tactical aid has been put on hold for the time being. The North Atlantic Pact commits its 12 members to respond in case of an attack on all. This means that if Russian troops invade European countries, support for the U.S. will include with long-range bombers on Moscow.

► **Arm preparation** is back on, a long pushed into the political arena as a campaign issue by the GOP. The lead editorial in the Republican National Committee's "On the Political Front," states the President for supporting 1950 fiscal year Air Force funds and speeding highly two airframes a 70-group USAF—which would be signed until two weeks after South Korea's invasion.

► **49 groups** of the Secretary of Defense Louis Johnson's views on Capitol Hill are under attack for "new program" for a 60-group USAF. They claim it's just the old 70-group program with a new face to give him the jobs. Johnson also opposed the 70-group program and now leads it detached to deliver it.

► **Aircraft contracting** will move full-scale ahead. Congress has completed action on a milestone allowing USAF and the Navy to spend funds contained in the 1950 defense appropriations bill. Senate action on the measure is being slowed down by other business.

► **A new WPA** is in the wind. This is why Colorado's Sen. Edwin Johnson proposed that all defense and government contracts be put under the Secretary of Commerce. "So all these activities would be in one place and could be easily shifted to a new war production board when it comes." The proposal carried in the Senate, but is eliminated from the final version of the emergency power bill sent to the White House.

► **Machine tooling** will get a new start out of a \$400 million supplemental for the Corps, scheduled to reach Congress by January. The Marine Corps now has a \$125 million program for this year, which the supplement will more than double.

► **Electronic, radio equipment** House requests for procurement will be included in the 1950 defense appropriations bill, now in the mail at the Department of Defense, and set for introduction in Congress sometime between now and January.

► **National Science Foundation** is probably out for another year. The House turned down \$278,000 for organizing the foundation so that it could launch its \$15 million program to promote basic research and development next year, and the Senate isn't disposed to put up a fight over the matter.

► **Peace security**. Cases in Congress to give the President sweeping powers to clamp down security regulations on aircraft and other defense plants and installations, and provide criminal penalties for violations, even through register.

► **Smoking regime** sides. The Inspector General's Office, in cooperation with the Senate Defense "Witching" subcommittee, headed by Sen. Lyndon Johnson, is conducting one of the most serious regime sides Johnson is seen on the stage of the investigation.

► **Guided missiles**. A House Armed Services subcommittee headed by Rep. Edward Heister, will take off on a spotcheck of guided missile installations and plants after

the November election. The group has held about 200 sessions with top scientific and military and intelligence officials. Rep. James Van Zandt announced "With German assistance, Russia has the lead. Our progress will have to be stepped up. We want to decide how, and how much."

► **Plane costs** will soon be looked into by a House Armed Services subcommittee, headed by Rep. Paul Kilday. Reports are current that lower aircraft can be produced this planned because of cost cuts.

► **AF Electronics Development Center**. The plan for congressional approval of new letter than 2010. It would be located at the 166-million Gifford AFB, Roswell, N. Y., and candidate work now carried on at Wright Field, the Watson Laboratories at Langhorne, N. J., and Cambridge Field Station, near Boston. New Jersey congressmen oppose the Roswell location, but USAF reports the cost of establishing the center there would be only \$1 million, compared with \$15 million mostly for buildings, at Langhorne.

► **Tax write-off**. Stopped-up construction for aircraft and other defense plants to speed construction against cost. The program approved by the Senate permitting write-offs of plant costs for tax purposes, of 25 percent a year over five years, instead of 10 percent a year over a two-year period, will probably be played by the House.

► **125-million testing program** for new commercial prototype is set for enactment. The Administration has pushed it out of the House Interstate and Foreign Commerce Committee, where it was delaying while committee members used to wait out a large-scale program. Aircraft manufacturers, partly because of heavy military business, are cool to a full-scale commercial plane development program at the time.

► **CAA outlook**. CAA's \$130 million budget for this year is set for a sizable reduction under the congressional directive to the President to trim \$100 million off the \$15 billion appropriated for government agencies. CAA had a \$127-million budget in the 1950 fiscal year.

► **CAF chairman**. Independent air series are shaping a campaign to get congressmen to pressure the White House to fill the vacancy with a spokesman for their cause against the scheduled election.

► **Tax dodging**. Congress will soon act on proposed revision of the 15 percent airline tax through ticket purchases outside the country. A provision included in the new tax bill will require that the tax be paid on all trips beginning and ending in the U.S.—regardless of where tickets are purchased.

New Laws

Congress has completed action on measures which:

► Give CAA authority to control air movements over national areas during emergency.

► Authorize a \$14-million new airport in the vicinity of the District of Columbia.

► Set up a clearing house in the Department of Commerce for the collection, dissemination, and exchange of scientific, technical, and engineering information.

► Provide for the portrayal of the story of aviation progress in the unknown sections of the historical front of the records of the Capitol. The President has already requested funds for the project.



SERVING THE HEART OF THE NATION

THE LOCKHEED CONSTELLATION

NOW IN SERVICE FOR

Capital Airlines



Capital Airlines, serving the heart of the nation, now features the most luxurious airplanes in the world—new Lockheed Constellations. These five-engine aircraft are more than luxury and luxury—they also provide an excellent way of making a difference.

Lockheed Constellations have been proved around the world. They have crossed the Atlantic 26,000 miles. They have flown 7 billion passenger miles.

equal to carrying 7 million people flying 1,000 miles each. Over every continent, above every kind of weather, these majestic airplanes are daily proving that air travel can be comfortable and dependable. Now, 12 major world airlines fly Constellations.

Lockheed is proud to be a part of the progress of Capital Airlines, a system with an unrivaled 23-year record of service to America—42 years of service serving a great capital and its country.

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AIRCRAFT CORPORATION, BURBANK, CALIF. • LOOK TO LOCKHEED FOR LEADERSHIP

TABLE I

Cruising Speed and Altitude Trends

Aircraft	Condition	Altitude (ft.)	Speed (mph.)	Indicated Time
DC-4	Max. cruise	16,000	194	227
Constellation 749	Max. cruise	18,000	211	197
Stratocruiser	Max. cruise	25,000	210	125
Caravel	Constant moderate	36,000	239	89
Overall average		20,000 ft.	210	119%

Note: The speeds are given at mean weight and ICAO standard temperature.

the mpg, continues to improve until very close to the ceiling.

While these high altitudes are necessary for economy, they are also the reason why we get higher speeds. Table I clarifies this point: It will be seen that as the best jet uses the cruising speed of transport aircraft has more than doubled, from the DC-4 at a maximum of 227 mph. to the Caravel at 493 mph. Most of this is due to the increase in cruising altitude: from 16,000 to 36,000 ft. But the indicated cruising speed has only gone up 53 percent, and, as we stated above, some of this (about 20 percent) is due to the way cut in the characteristics of the tailpipe at a power unit.

Incidentally, those who like to peer into the future may desire from this that the projected upcoming height probably will be a hint to the maximum speed of future transports. For instance, it already appears that there is a critical height above which it is necessary to raise in immediate time if there is any future of the pressurization system. No operator can consider operating above 40,000 ft. until he has gained considerable experience of the reliability of such systems at altitudes between 35,000 and 40,000 ft.

Cruising will be carried out at the maximum practical rate, probably at the maximum endurance rate prescribed by the manufacturer, though they may have to be limited by our restrictions of obtaining reasonable overall life.

There are two reasons for this. First, because of the higher altitude permitted by the higher power, and second, because one of the characteristics of present-day engines is the rapid rise in the specific consumption with reduction in rpm. The effect of a decrease in rpm, is to reduce power. From what we have just seen, that reduction in cruising altitude, which also increases the specific consumption, and the consequent result is a large loss of speed as well as a loss in range.

The fact that with turbine aircraft both the maximum speed and the maximum

economical procedures are obtained at the same rpm (mean cruising), though at different altitudes, is probably the most noticeable operational difference from piston aircraft.

For pistons and long range the cruise will be carried out at a slow climb.

As the flight progresses and fuel is consumed, the weight will fall and the aircraft will tend to go faster. If we stay at the same altitude, then the wing will increase only in the same extent as the speed.

A much better procedure is to allow the aircraft to climb slowly so as to keep approximately the same altitude below the ceiling. The rate of climb will be only 50-60 mph., which will not have much effect on the forward speed,

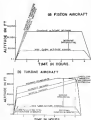


Fig. 1—Typical flight plans (a) for piston engine craft and (b) for turbine engine craft, showing limitations imposed by maximum pressure differential. Temperature ratio is ICAO standard "Tropopause maximum" as opposed to ICAO "Tropopause" and "cruise maximum" at 6 F. below that CAA "hot day." Altitudes are appropriate for cruise with weight to lift—temperature ratio 43 and lift/draft thrust loading 5 lb/lb.

but will appreciably improve the wing.

We cannot tell exactly how fast we should climb until we go into the matter more deeply (the best method is given later), it is sufficient here to show that you should climb and not stay at the same altitude.

The maximum rate of climb should be used to attain commercial altitudes as fast as possible.

That more or less follows what has gone before. The climb will be done at maximum climbing rpm and at the speed for maximum rate of climb because the forward speed is fairly high the distance covered is considerable.

Normally the constant will hold true, and the descent will be carried out as fast as time as can be done. There are, however, some limitations. First, the pressurization system may not be able to maintain the desired steady increase of cabin pressure at 200 to 300 ft/s of the rate of descent exceeds, say, 1,600 ft/s. Second, very high rates of descent are associated with forward speeds which may reach critical Mach number. Even if this is not the case, it may be unnecessarily uncomfortable for passengers to turbulent cloud layers are present.

The solution may well be to use drop flaps and nose thrust, though in the case the angle of the cone may appear somewhat alarming. Taken all in all, we cannot yet say which is the best method of descent, and it is reasonable that at the recent IATA Technical Conference at Albany Park, N. Y., this was one of the few points on which there was diversity of view between jet manufacturers.

The flight plan is highly sensitive to changes in ambient air temperature. While many people are aware of the temperature sensitivity at altitude, it also applies to the cruise, and this was a topic some explanation. With all types of engines, an increase in air temperature results in a loss in power, and normally also in an increase in specific consumption.

On turbine aircraft, however, this loss in power comes as additional loss of altitude and hence a further reduction in specific range. These modern who are interested in obtaining actual figures should refer to the Thirteenth Wright Brothers Lecture given by A. H. Kemel, chief designer of the Bristol Aeroplane Co. in Washington on Dec. 17, 1949. From one of Kemel's charts it is seen that the effect of going from Standard temperature conditions to Tropopause maximum is to decrease the specific range from 145 to 121 mph., and a further increase in temperature to Tropical Maximum cuts the speed to 123 mph. The corresponding losses in range are 64 and 15 percent respectively.

(Continued on page 25)

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TABLE II

Variation of Fuel Burnt With Cruise Control Procedure (MINIMUM CRUISING RPM THROUGHOUT)

Procedure	Still Air Distance Flown for 40,000 lb including climb	Fuel Burnt for 1000 cu including climb	Cruising Mach Speed	Mach %
	mi	lb	mph	
Max. speed	2800	77	42.5	105
Constant altitude (14,000 ft)	5150	87	34.5	137
Constant EAS (25) mph	5250	93	37.25	109
Constant maching	5400	94	36.00	105
Constant TAS (41) mph	5625	100	34.25	100

Even more striking is the drop of
nearly 30,000 lb in operating altitude
five factors is likely to lead to consider-
able difficulty in flight planning.

These five principles are reflected
for us to form a clear picture of the
best general flight plan. Fig. 1 shows
typical (a) piston and (b) turbine
engine flight plans for various standard
atmospheres (these used here are de-
fined in DGAR leaflet 20). All the
features discussed above are seen—the
quicker cruising altitudes, the steeper
climb, the slowly climbing cruise, the
more rapid descent, and, but not least
important, the larger variation of
flight plan with ambient air tempera-
ture.

► **Choosing Cruise Importance**—Of
these, the most rapid descent and the
slowly climbing cruise are likely to in-
volve the greatest changes in air traffic
control when a bomber necessary to
run before and piston aircraft. In
particular, the slowly climbing cruise
will mean that the present method of
establishing cruising height by relation
to compass heading will be unreliable.

The climbing cruise and the variation
of optimum altitude with temperature
are the factors likely to have the
greatest effect on methods of flight
planning and cruise control, particularly
when it is realized that temperature
changes of 5C were experienced as at
many points in the recent flight of
the Comet to Central Africa.

► **Average Grid**—If we want to go into
greater detail, to find out exactly at
what altitude we should start to cruise,
and how fast we should climb during
cruise, we must go to special charts for
each aircraft. The most convenient
chart to use for this purpose is the
"Air Miles per Pound Grid" (simplified)
first developed by RQAC and
English manufacturers in 1945 which
has since become a standard aerobed.

Because the rpm is kept constant
during the cruise it is possible to reuse
the grid now used for piston-engine
craft to indicate the effect of altitude

These charts give the relation between
weight and forward speed for a range
of heights, drawing thus the altitude
at which these speeds are obtained. The
look of the resultant chart is rare, and
it may seem awkward, but these grids
are in fact easy to use and a great help
in understanding the problem.

Fig. 2 has been specially calculated
for this hypothetical aircraft.

Maximum gross weight: 132,000 lb
Powered by 4 turbo-prop 4,500 hp
at 10,000 ft = 1000 lb per thrust
Compression ratio: 6:1

Maximum gas temperature: 1300 K
Span: 165 ft.
Fuselage drag area: 42 sq ft
Aspect efficiency factor: 0.98
Engine propeller efficiency: 0.85

Some may want to use Fig. 2 in effect,
the accuracy of the statement that high
altitudes are necessary for comfort, and
that the most economical altitude are
above those at which the aircraft goes
the faster.

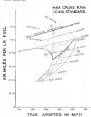


Fig. 2 Air miles per pound grid for hypothetical turbo-prop craft, showing variation
with gross weight, propeller and piston
altitude for maximum cruise rpm

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► **Opening Leads**—The most important characteristic of the power plant usually the clarity with which the opening leads can be shown, was a prime requirement in developing these charts.

One of the opening leads is obviously that of the maximum altitude attainable with the limiting cabin oil levelled position. A second opening lead, not immediately obvious, is the height for maximum speed at each weight. A little thought will show that there is no point in operating at a lower altitude, for not only does the forward speed decrease, but the consumption also increases greatly.

On these aircraft there may also be further limits through critical Mach number or by aerodynamic effects on nacelle wing design. For clarity, these are not shown on Fig. 2.

It will be noticed that on both of maximum speed is shown on Fig. 2. This last speed cannot be decreased with certainty until further experience is available. It is probable to be as far to the left as the speed for the maximum range because it can be seen from Fig. 3 that the best range was obtained only 2000 to 3000 ft. below the absolute ceiling and obviously great fuel difficulties will prevent operation so close to the ceiling.

► **Example**—On this type of plot it is simple to work out the effect of different engine operations. For instance, if we take off at 100,000 ft. and climb to a height of 10,000 ft. and then maintain this height, we shall save from point A in Fig. 2 and reach point B after burning 40,000 lb. of fuel. The average speed will be 0.0530 and the average forward speed 421 mph. If, however, we have followed the range curve even above and let the aircraft climb to this one so as to maintain a constant true speed, then we shall go from point A to point C. The true speed will be 415 mph, downward, but the average speed will be 0.0556 so that we shall have reduced our engine consumption by 15 percent at the expense of only 10 mph., or about 2 percent to speed.

It is clear that no infinite number of alternative cruise control operations can be drawn up from these charts. The problem is in finding one that is safe in rough air position, does not require an extra crew member in flight or render flight planning unacceptably difficult on the ground, yet saves within reasonable distance of the optimum.

► **Comment, headline**—Two possibilities immediately come to mind. First, constant reduced speed and second, constant lift coefficient (or constant pressure). Unfortunately while the former is the standard chart that has been devised we shall see later (from Table III) that it is more safe from the opti-

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Fig. 3 Variation of fuel burnt with cruising procedure for some hypothetical turbo-prop aircraft as in Fig. 2

start from the point of view of range considerations.

Although a considerable improvement on flight at constant altitude, it is not good enough for long-range work, though it may well be used as short-range turbine aircraft.

The new method now proposed is constant acceleration. There is no motor at present available which permits this to be used direct, and it will be necessary, therefore, to work from a series of charts.

Test attempts to lay out such tables, however, have shown them to be entirely practicable.

Fig. 3 and Table II have been calculated for the same hypothetical aircraft to show how the weight of fuel varies for a number of cruising procedures. They show that even the maximum speed procedure yields only 3 percent gain over the cruising speed for the most economical procedure considered, in this case constant true airspeed, though it requires as much as 25 percent more fuel. (Comparatively, a piston aircraft would show a variation of 20 percent in speed for a spread of 20 percent in fuel used.)

Because of the negligible loss in speed through following a relatively economical procedure on a turbine aircraft, and because of the enhanced advantage of decreasing the fuel consumed as compared with a piston aircraft, it must follow the maximum speed procedure will almost never be used.

Setting Engines—All this shows the relative lack of feasibility proposed by turbine aircraft. There is, however, one possible way of increasing flexibility. (Continued on page 32)

A constant true airspeed procedure is the most economical considered in Fig. 2 and Table II. It is not, however, the optimum. Theoretically, a constant altitude, constant acceleration as a general criterion (this being, except for the loss above the tropopause, the most appropriate to compare) is the most appropriate to compare.



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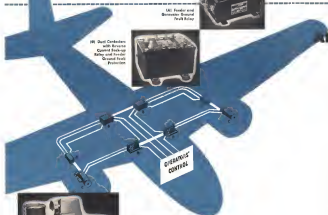
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Fig. 4 (a) Typical ambient air temperature mileage plotted against various standard altitudes. (b) Constant speed. (c) Constant power. (d) Constant torque. (e) Constant torque. (f) Constant torque. (g) Constant torque. (h) Constant torque. (i) Constant torque. (j) Constant torque. (k) Constant torque. (l) Constant torque. (m) Constant torque. (n) Constant torque. (o) Constant torque. (p) Constant torque. (q) Constant torque. (r) Constant torque. (s) Constant torque. (t) Constant torque. (u) Constant torque. (v) Constant torque. (w) Constant torque. (x) Constant torque. (y) Constant torque. (z) Constant torque. (aa) Constant torque. (ab) Constant torque. (ac) Constant torque. (ad) Constant torque. (ae) Constant torque. (af) Constant torque. (ag) Constant torque. (ah) Constant torque. (ai) Constant torque. (aj) Constant torque. (ak) Constant torque. (al) Constant torque. (am) Constant torque. (an) Constant torque. (ao) Constant torque. (ap) Constant torque. (aq) Constant torque. 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That is shutting down one or more engines in flight, and continuing to operate at maximum rpm, on the other engines.

On a four-engine turboprop aircraft, cutting each engine reduces the cruising altitude by 5000 to 6000 ft. Even so, allowing for the cutting of up to two engines on a four-engine aircraft, the maximum speed of flight with all the normally considered different procedures appears to be less than 25 percent, compared with approximately 50 percent for a single-engine aircraft capable of flying at 20,000 ft. Douglas feels six or more engines may therefore be attractive to an operator faced with peak loads of delay due to weather and traffic, because they should enable close schedule regularly to be maintained.

* **Temperature Effect**—So far, we have centered any reliance on the effect of temperature on the best thrust control procedure. This can be demonstrated only by drawing up additional ways to give for a series of temperature curves.

But here we must pause for a moment, and register how we can best arrange our charts to include temperature as a variable.

Obviously, since we intend to climb slowly throughout cruise, the temperature will also be continuously varying and we shall have trouble trying to keep track of the correct chart if each is drawn up for one particular temperature. Moreover, flight planning will be a nightmare, because even the most elaborate meteorological forecasts will only give us temperatures every 5000 ft or so, and a great deal of interpolation will be necessary.

The solution to this difficulty is to use the deviation from the standard temperature as the variable, and not the temperature itself. This will vary much less than the temperature, as can be seen from Fig. 4 in which some representative temperature curves in flight are plotted against altitude. The

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speed of temperatures is 79 deg F (44 deg C).

However, Fig 4(b) will show that temperature deviation has only varied over the range of 1.19 (in 100).

This means we should plot all our graphs and show up all our tables for a series of temperature levels: ICAN, ICAN + 20C, ICAN + 50C, etc.

► **Tropopause Vacuo-Duane**—has already taken place with meteorologists on the possibility of obtaining forecasts directly in this way, and there is no doubt in this respect. If the particular result is capable of flight at great altitudes, however, there is one point to be observed, because both the British and the American standard altimeters react a tropopause at about 35,000 ft., above which the temperature does not start.

In actual practice, the tropopause varies tremendously in height, not only day by day, but also with latitude, reaching as much as 60,000 ft. in the tropics. When operating through the tropics, at any rate, the actual height after will continue to fall with increasing altitude above 35,000 ft., in that the tropopause deviation from ICAN and NACA standard will show an abrupt change at this height, as disclosed in Fig 4(b).

For convenience in flight planning and in actual control of the aircraft during flight it is advisable to use the temperature deviation from the "CAA Hot Day." If the same course control charts are to be used as composite indicators as well, it may even be found desirable to use a new "standard atmosphere" which has the same standard temperature and lapse rate as NACA and ICAN, but in which the temperature continues to fall right up to the maximum height at which the aircraft is capable of flying.

In such a short article, it is only possible to deal briefly with the basic problems of aviation. It is hoped, however, that sufficient has been said to indicate that obtaining the best out of these new transports will require the use of operational techniques of a high order.

A further secret is certainly a personnel instrument capable of a repetitive performance over a considerable range of conditions than present piston aircraft. Operation of turbojets at turbojets is therefore not to be under taken lightly, and the small operator with limited resources must be content for a long time to retain his present equipment. But for the well-equipped and established airline they offer a chance of improving the standard of passenger travel—in safety, speed, comfort and cost—to an extent impossible in any other way.

In fact, you cannot afford not to be turbojeted.

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Effect of Air Bleed

On Engine Operation

"Compressed air isn't free" is a complaint frequently heard on modern aircraft studies.

The problem of bleeding air from the compressor outlet for miscellaneous services long has plagued designers of engine, aircraft and accessory. Those concerned with delivering high engine and aircraft performance have opted bleed practice, while on the other hand it offers a convenient power source for operating certain systems.

Considerable quantities of air are provided as may be required for operation of engine and fuselage hydraulic powered plants, for such uses as cabin pressurization and conditioning, protection against ice formation, and boundary layer control.

Seeing this situation, the National Advisory Committee for Aeronautics has conducted research to determine just how serious the effect of bleed can be.

Its findings are given in a recent Technical Note (1161) "Effect of Compressor-Outlet Air Bleed for Specific Models of Engines, Operated," by Lieutenant F. E. Ryan and R. E. Kautz.

Analytical results agreed well with those of experimental investigations. The agreement tends to substantiate the grossness of the methods used in the analytical determination inasmuch as the data were obtained by the extracting of components of a different air-flow behavior than that used in the experimental determination of the effect of air bleed.

In general, bleeding air from the compressor outlet of an axial-flow turbojet, decreases thrust by slightly more than double the percentage of bleed and increases the specific fuel consumption slightly less than double the percentage of bleed for rated turbine-inlet temperature operation.

Decreasing the turbine-inlet temperature by increasing compressor inlet temperature increases the effect of air bleed on engine performance because of reduction in turbine-inlet temperature rate.

In all models investigated, there was an significant difference between variable area and fixed area turbine engine operation for all bleeds up to about 0.10 of compressor air flow.

Rotary Actuator

A light rotary actuator has been added to the large family of actuators produced in recent years by Lear, Inc., 139 Lucas Ave., N.W., Grand Rapids.

Designated the Model 167A, the unit weighs less than one pound. It develops a maximum peak output of 110 in.-lb. with a normal rated peak load of 60 in. lb. Lear says the device produces a non-linear torque output which approximates typical aircraft door design and fast valve load curves "resembling" as high "breakdown" and "light-closing" torque required for valve systems.

Besides application with fuel, oil and pneumatic valves, its use is indicated with door control and hydraulic release, locking controls, and clamps. The company says it can also be used to replace mechanical and solenoid-operated devices, particularly in applications where the load varies with the stroke.

The unit requires less than one second to complete its full 50 deg. clockwise rotation under the normal rated peak load condition of 60 in. lb. Actuator shaft speed can be varied over the operation cycle so that valve closing begins at high speed but slows down when slowly to avoid run effects on the hydraulic system. The actuator can also be equipped with an adjustable slip clutch which compensates for hydraulic surge loads.

The integral life, die spring-assisted motor driving the unit is suited for an intermittent duty cycle of one second on and five seconds off. Lear says the device is designed to meet latest government specifications.

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FINANCIAL

Depreciation Rates to Be Changed?

Life of present transport types may be extended, as military needs delay development of new planes.

The impact of changing world conditions on obsolescence, depreciation and taxes may dictate significant changes in federal financial policy concerning light equipment.

Obsolescence has always been for most equipment the actual wearing out of planes in fighting operations. Obsolescence may now be postponed almost indefinitely, so far as it may pertain to existing air transport types, as a result of the current accelerated military procurement program.

The Government can be constructive to all aircraft now flying routinely, postpone retrofit. In addition, it will pose some new long-range problems for the industry. Most immediately, it may increase airline earnings, in time temporarily.

The replacement of light equipment in the air transport industry has been delayed to the third of obsolescence. The use of new models, already benefits the operator, through increased efficiency and lower operating costs. Certain active considerations also make the acquisition of the most modern types of equipment almost essential.

Capital Obsolescence—The need for replacement, as the past, have caused heavy demands in new capital expenditures to finance the purchase of new airplanes. This factor, if continued as unabated in frequent intervals, is bound to weaken the investment stability of the industry.

The airlines were beginning to plan for the worst around the investment community that got in following lawsuits for commercial service were not let off. The financial obsolescence of the air transport world, of course, has a far-reaching impact on the finances and operations of all air carriers. Once again the war would be renewed to re-equip fast and the fastest with the most advanced available transport types.

Nevertheless, competent aeronautical engineers have questioned whether a jet passenger transport type could be developed solely for commercial service before 1955. This premonition that a new model were placed in start production. Further, all engineering "how" must be developed and safety and dependability clearly established. High fuel consumption and increased traffic

problems would also have to be considered. Because of these factors, when obsolescence anticipated over a longer period of time before the jet transport would be ready for operation.

Reserve Applied—It was before the Korean war. With military aircraft production being accelerated, the industry may be required to postpone any development of jets for commercial service.

The recent wave of orders by a number of airlines for additional quantities of available transport models, together with planned modifications of older types, supports the belief that the threat of obsolescence transport carrying away is lessening.

While it is true that the Constellation 1041 and the Martin 4-4-A are both designed to be adapted for turbo-propulsion, it is unlikely that this powerplant will be tested sufficiently to be declared fit for regular commercial service at the time these planes are ready for operation.

The increased tempo of government military aircraft procurement will not remove the development program of jet and turbo-prop aircraft. The transfer to military types, however, may be required to make sure that the same military aircraft will be fit to meet the necessary obligations. Even under such circumstances, there is a wide of difference with the transportation industry. **Stimulating Story**—The last history of the Boeing Stearman biplane five years ago. Considerable military development went into the plane, which had entered in the C-47, a cargo and troop transport, when placed in production early in 1945 by the Air Force. The last of the commercial Stearman, which evolved following military development, made its initial flight last in July, 1947. Following early and comprehensive test program, the plane continued an approved type certificate from the Civil Aeronautics Administration late in 1948.

It was not until early in 1949 that deliveries of the aircraft started with a few planes based early on the first contracting order. To this day, the Stearman is confronted with a number of engineering problems, particularly in its powerplant. It took more than four years after the military type

was first produced, to place the new military version in service. Further, after more than a year and a half of operation, the "bug" still remains. The Stearman will eventually convert to an even more expensive and testing proving period by the CAA before being certified.

Any industry new aircraft type, such as envisioned in the jet and turbo-prop designs, will be required to defend its own new design against and testing proving period by the CAA before being certified.

Value Up—The value of these aircraft has increased the value of all existing transport types in operation. For example, most airlines assigned a usable life of four years to DC-4s. In many instances, this equipment has been written down to actual value averaging around \$15,000 per plane. Yet, the strong demand for DC-4s to do a military in firm bids of a maximum of \$175,000 to as much as \$153,000 per plane for the DC-4s.

Present depreciation schedules on post-war transports such as the Constellation and DC-6 seem to be generally computed on a ten-year cycle. On this basis, the value of these planes is due to run out of depreciation within the next few years.

In all cases, it should become an estimate of the value of the present depreciation schedule that will tell about that revision of changes may be in order. High depreciation charges represent a heavy tax of aviation.

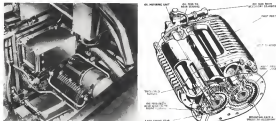
By extending the depreciation basis, the airlines would be able to recover, before taxes, for example, the 35 truck loads, for the 12 months model Month 33, 1948, resulted a net operation expense of \$10,000. However, the cost of new flight equipment for this period amounted to \$10,100.10.

More for Taxes—The airlines are also being confronted with a demand for net of 10 percent with the transportation industry. This high rate will require the airlines to cover. The early calculation of depreciation costs will make more net revenue profit for them.

Are lower rates of value recovery will make it difficult to account for sufficient funds to help finance subsequent equipment purchases to replace existing fleets.

The airlines are more likely to get out of new aircraft types completely subsequent major financial problems. Early in World War II, military book profits were being added to the airlines to the extent of 10 percent. Taxes of course, were paid on such gains. When a same time to replace equipment fleets after the war, chiefly with DC-4s, it was discovered that capital expenditures per airplane were more than that obtained from the disposal of DC-4s.

A comparison of the new pattern type can be in the ending—Biff Atchell



Godfrey cabin superchargers shown mounted on a North Star Merlin engine (left). Cutaway of Roots-type blower shown as dash (right).

British U.S., Cabin Blowers Evaluated

TCA installs Godfrey superchargers in its fleet of North Stars; Stratons units go into RCAF's C-5.

Installation of a British-designed cabin supercharger on Trans-Canada Air Lines' fleet of North Star transports, and use of a U.S. made supercharger on a similar Canadian aircraft, is giving air line engineers a chance to evaluate competitive units under nearly similar conditions.

TCA has ordered its transports with Godfrey Type 15 ML 9 units, made by Sid Godfrey & Partners (Canada) Ltd. U.S. about the same time, Comstar installed two Model 500 S blowers, made by Stratons Corp., Farmington, on a C-5, identical to the North Star type except that it mounts the DC 6 type nacelle and Pratt & Whitney R-2800 engines instead of the Rolls Royce Merlins in the North Star. The C-5 is in the personal plane of Canadian Prime Minister Louis St. Laurent.

Intended for cabin pressurization and air conditioning, Godfrey claims that its equipment is much simpler and more convenient to operate than the previous installation. It indicated that TCA's decision to select a cabin supercharger other than the one delivered with the North Star was produced on basis that the hydraulic drive of the original unit would malfunction during the latter Canadian winter.

Desires to install the Godfrey blower needed from a unit by TCA on

planes to the Godfrey plant in England. They stated that the Godfrey equipment was readily adaptable to the North Star's superchargers.

Stratons Design—The Stratons unit is composed of a conventional centrifugal impeller, the rotational speed of which is automatically variable, independent of engine rpm. Speed is controlled through variation of oil level in a servo hydraulic coupling, similar to an automobile fluid drive mounted between the engine drive and the impeller. The hydraulic drive for each blower is also manually controllable from the cockpit, providing one or the other supercharger to be accepted or rejected as when it desired during flight.

Since the output of one supercharger is sufficient for most pressurization requirements, the second unit may be accepted and used as a standby.

Coupling an interlocking cycle requires 1 sec. Uncoupled the Stratons unit drives but five to ten hp. from the engine.

Stratons says that the operation blower uses the engine at about 50 hp., approximately the same power required to drive the Godfrey unit, both of which operate continuously during flight.

The Stratons unit, one of which is

installed on each outboard engine, both directly to the left power pad of the

main engine and incorporates an emergency shut-off in the blower from the engine in case of failure.

In the case of the C-5 installation, oil used in the hydraulic coupling and to lubricate the supercharger is drawn from the engine oil supply, circulating the usual superchargers of tank and cooler. This uses about 140 lb. per airplane.

Godfrey Design—The Godfrey supercharger is a positive displacement blower of the Roots type. Entirely different from the centrifugal design, it consists of two intermeshed, interlocking rotors revolving within an aluminum housing.

As in the case of the Stratons unit, it mounts directly on the accessory section of the engine. Since the speed

is variable from the Merlin engine via a mechanical, a geared up output was required, bringing the superchargers speed up to 2,900 rpm.

The speed unit available to the Stratons unit—100-hp. output—was provided on each plane, on auxiliary engine.

The Godfrey installation also includes a filter in the air intake to protect the equipment from foreign material and an acoustic silencer in the outlet duct to reduce supercharger noise.

COMPARATIVE PERFORMANCE
 • Air delivery: Godfrey superchargers, 10 lb. of air at 2400 engine rpm and ambient altitude of 20,000 ft.
 Stratons superchargers, 55 lb. of air at



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NEW AVIATION PRODUCTS

Push-Pull Controls

Improved heavy-duty push-pull controls, polished and polished for aircraft, are being offered by Simmonds American, Inc., Larchmont, N. Y. They were developed rapidly to meet stringent requirements listed in the latest military specifications affecting this type of equipment, according to the firm.

The new controls are descendants of those produced by the company during the war. Simmonds engineers have added these improvements:

- Stronger sliding rods, made of stress steel or chrome molybdenum
- Independent cable glands to prevent control jamming and reduce friction
- For very high load tests, glands are double-olive (dumbbell) shaped instead of "single-olive" (cylindrical). This makes them less apt to "cock," or mis-align tubing and create excessive friction or "bind" when control system is overloaded in compression
- Better sealing of controls at each end to keep moisture and dirt out of tubing—last long greater use

Simmonds says its latest push-pull



controls will be used for operation of a door on the Martin 4-O-4. It also reports they are being used in military craft.

Units have operated satisfactorily in tests over thousands of cycles at temperatures ranging from -73 to 168 F.

and are designed to operate for about 5 million cycles without requiring maintenance. For heavy-duty work, controls are available in rigid or flexible couplings on No. 5 (4 in. o.d.) and No. 7 (5 in. o.d.) sizes. Light-duty units also are available.

ALSO ON THE MARKET

Small relay with AN connector is internally sealed and has been given "full engineering approval by the Air Material Command," states says Sealed Relays and Accessories Co. 3 amp. relay in contact combinations up to and including four pole double throws. Address: Adams Electric and Relay Co., 2451 N. Nueces St., Burbank, Calif.

Electric control levers not only do basic 600-lb. punch, but follow through with "reverse" of 2000 lb. at end of stroke. Controls can be adjusted to adjust force of blow as desired. Tool will stake, crimp, mark, bend, crush, cut, or cut in punch. It has 13 in. narrow steel, working length of 48 in. below handle, 5 1/2 x 1 1/2 in. base and weighs 50 lb. Address: Blank & Webster, Inc., 50 Pleasant St., Northham, Mass.

Vessel coating for thermoplastic tanks and similar parts withstands salt and most chemicals at higher temperatures for longer periods than rubber materials. Milder has high dielectric strength of product, Green Plastic 8430 permits thinner walls than are possible with other insulating materials. Companies who change plastic have excellent low temperature characteristics and that it is the only compound of its type available for processing into any desired form. Address: J. F. Goodrich Chemical Co., 534 Route 160, Cleveland 15, Ohio.

Speedy machine's vice can be quickly replaced as desired to any position through push-pull action—eliminating need to open handle for adjustment. Instant side action feature does not require use of complex operations. It has ruggedness and strength of conventional models, makes easy a little over one hour of handle counter clockwise to lower jaw, permits it to be moved by hand to any position. When work is engaged, use operation in conventional manner. Address: Dodge Mfg. Corp., Madison 24 Ind.

Safety ladder for lumps and aprons work is made of aluminum alloy to combine strength with light weight. Wide steps support 600 lb. each, while ladder itself weighs only 15 lb. It can be used as a full step ladder or extended to an 18 ft. height. Legs carry rubber coating to protect surfaces in contact with it. Address: Original Products Co., P. O. Box 5755, Ft. Worth.



The Birdmen's Perch

OKAY—in you've got to feel something!

We've said you had to avoid emergency landings, but let's assume you're coming down anyway.



Here's a couple of pointers that may save a happy ending to a very tight landing situation.

1. If you've got any choice at all, pick a big hawk of some species, even though the hawk may be rougher than the little perching bird along the road. A hawk's surface doesn't help much when there's not enough of it to slow down in.
2. Be sure to land into the wind and above it, to maintain your flying speed.
3. If you're landing near the shoulder and it's apparent that you can't stop, aim

the nose of your ship between a couple of trees so that the wings (not the fuselage) will absorb most of the shock.

Now let's see—some point somewhere near \$15.00 each, one section of wire from \$3.00 on.

AND HERE'S ANOTHER TIP!

Now that you're up and around again, and contemplating a bit of flying—

Don't get caught with your oil pressure down!



There's nothing, positively nothing that will keep this little old engine longer like a condense full of Gulf's Aviation Oil—Series D!

Ask any pilot! It's the latest development in oil that is its latest development in oil—Series D—because it's the only series of oil that's been tested by Gulf's exclusive Ashford process to remove those extra carbon and sludge tars that!

Ty Gulf's Aviation Oil—Series D—the very new one you fly. Increase those periods between overhauls up to 1000!



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AIR TRANSPORT

Airline Unions Press Wage Drives

ALPA backs mileage limitation plan; pilots to share benefits produced by flying new, faster aircraft.

By Charles Adams

Airline unions are putting new power in their drives for higher pay and other concessions from the carriers.

Initiatives are multiplying that the employer groups will not cause away from the bargaining tables employees.

► **Freight Forward-Wheelers' application** that the government may freeze wages during the present organizational emergency has left a line under union leaders.

As a result, some of the negotiators that have dragged on for many months are in a critical stage. Higher living costs and severe pay increases in other industries (notably the voluntary hikes announced by automobile companies) have contributed toward the increased union pressure against airline management.

Nevertheless, can an higher pilot pay in the 14-month-old dispute justify the Air Line Pilots Assn. and American Airlines' Pilotage was broken off last month. ALPA wants arbitration, but the company has not agreed to it.

► **IAM Campaign—International** Assn. of Machinists is making a strong push for higher salaries pay from TWA, Northwest, Eastern, National, and United Air Lines. The union of the campaign came last week when the union received an arbitration award providing a 40-hour work week in exchange for 40-hour overtime pay.

Although the award fell far short of IAM's demands, it did make airline management's hold the wage line stand. Earlier this year, ground employees affiliated with the Transport Workers Union initiated new contracts with two major carriers pending for no pay increase, and the airline was hopeful that the wage fight had been stepped. New contracts at present, combined with soaring material costs, not only threaten airline profits but may mean higher fares to deal, according to some industry officials.

The UAL-IAM award was set as a duty dispute. National Airlines, for instance, reportedly has considered to give the state pay boost granted by United.

Northwest and TWA have agreed to

arbitrate with IAM. A strike vote has been taken among IAM members employed by Eastern, but a new attempt at settlement was to be made last week. IAM and Capital Airlines also are attempting to work out a new contract through mediation.

► **ALPA Demands—Big move in American Airlines' arbitration** suggestion, with ALPA demands by the pilot demand for a monthly mileage limitation to combat technological innovation and cockpit demands resulting from the reduced use of large, faster and more productive transports (Aircraft Week May 15).

To the contrary, the ALPA bid for rate pay for less work constitutes "discriminated day."

ALPA claims that it is not "holding" when employer ask to share the increasing productivity resulting from technological advancement. "Mileage limitation," according to ALPA, President David L. Beckwith, "has a terrific national defense aspect since it will cause more trained pilots available for national defense."

Beckwith points out that the National

Labor Board suggested the possible to raise need for mileage limitation when it set up the pilot's pay structure in 1954. Railroad experts now have a limit of 6000 miles per month.

► **Ability To Pay—ALPA asserts** that American limit presently offer current cost of the mileage limitation.

ALPA says that when applied to Continental's proposal calls for \$17.78 more pay for flying 75 hr, then is now given for the full 60 hr monthly maximum.

A DC-6 operator would get \$21.40 more for flying 70 hr, data he has been receiving for the 55 hr maximum.

Airline officials expected better that pilot demands for other benefits, such as on-duty time limits, night, in passenger, restrict a pilot's maximum monthly flight time to considerably less than 70 hr.

At present, an AA Captain first pilot with eight years' seniority could earn a theoretical maximum of \$1020 monthly if he flew the 55 hr maximum, half pay and half night. That's about \$12 an hour. The new formula would raise the pilot's pay to about \$14.25 an hour—equal to an 18-percent wage hike.

A DC-1 pilot can now earn a theoretical \$1100 monthly under the current contract, assuming eight years' seniority and 55 hr. Flying time, half day and half night. That's about \$13.90 an hour. The new formula would make his pay to about \$17.20 an hour—a increase of more than 25 percent.

► **Cost Comparison—ALPA contends** its demands are far less unreasonable than the airline formula. A 30 percent pilot would get only about 33 percent more pay than was specified for a DC-6 pilot in the original NLRB Decision 33 wage scale set up in 1954. For DC-6 pilots, the pay would be 35 percent over the scale originally established for DC-6.

The union points out that from the standpoint of price index factors, the Carrier is 32 percent more productive than the pilot; DC-6, and the DC-6 is 45 percent more productive. Passengers' productivity has, of course, increased.

ALPA argues that AA is 1945 set the work, with all assigned no planes from 45 to 40 with no decrease in pay. This is monthly productivity in what the pilots are not in quantity. In addition, ALPA declares the unassigned employees were later given substantial pay increases.

In 1953, the legal maximum wage was 3245 cents more than the current of 45 hr. month per month, the cost continued. "Today the legal maximum is 75 cents an hour, with a maximum of 40 hr. This is an increase of 250 percent in wages and a decrease of more

than 16.6 percent in working hours. Based on these figures, pilots would receive about \$490 for 71 hr of flying DC-6."

► **Formula Explained—Here's how** the proposed mileage limitation formula works for American's present equipment.

The base used is 15,000 plane miles monthly on DC-6 (60 hr of flying time multiplied by 160 mph—the DC-6's cruising speed). With the Carrier's 325-mph speed, 19,125 plane miles are produced in 65 hr. Difference of 79,125 plane miles for the Carrier and 15,000 for the DC-6 gives a \$135 plane-mile productivity increase.

ALPA would divide this productivity increase by two, because 79,125 miles to be used for the pilot's benefit. The DC-6 base of 15,000 miles would be added, making a total Carrier mileage base of 16,362 miles monthly. Dividing the 16,362 by 325 mph (the Carrier speed) gives a maximum monthly flight time of 75 hr.

► **DC-6 Limit—The DC-6, with a maximum speed of 325 mph, now enables** the pilot to produce 19,125 plane miles monthly under the 55 hr limit. Substituting the DC-6 base mileage of 15,000 leaves a 5616 mile increase in productivity for the DC-6.

Dividing the 5616 by two gives a 2808 mile increase to be used for the pilot's benefit. Add the DC-6 base of 15,000 plane miles, and the DC-6 mileage limit per month under the new formula would be 17,808 miles. At 285 mph, that is equal to 70 hr of flying monthly.

The same formula works for any plane. This half the difference between the carrier and the pilot's productivity.

► **DC-6 mileage** and any airplane's speed multiplied by 55 hr and add it to the DC-6 base of 15,000 miles monthly.

► **Total Pay—ALPA contract modification** would leave AA pilots taking a pay cut despite the reduction in hours. Mileage pay would be increased by boosting the existing scale of the newer stage under the contract formula.

Thus, the net effect at present amounts the Carrier a 190 mph speed, while the new required speed would be 225 mph.

There would also be an added more cost called "gross weight pay." It would be one cent per mile for each 1000 lb. gross weight of the ship as added.

At present, a Carrier captain's \$1035 total pay for an 55 hr month would include \$590 base pay, \$504 hourly pay and \$146 mileage pay. The \$1875 pay received under the new proposal for a 71 hr month would be \$1660 base pay, \$1460 hourly pay, \$675, mileage pay \$152 and gross weight pay \$111.

Findings Issued In AA Dallas Crash

Early execution of an engine-out approach probably caused the crash of an American Airlines DC-6 during an attempted landing at Love Field, Dallas, Tex., last Nov. 25, according to Civil Aeronautics Board investigators.

The Board's official report on the crash suggested that the crew did not take the added power items which became necessary when they decided to land with the No. 1 engine inoperative but contributing importantly to the crash was improper fuel management. The crash was not the result of an engine failure, according to the No. 1 engine test.

► **Engine Out—Based from New York** to Mexico City, the DC-6 experienced an engine failure on the No. 1 engine was No. 1. When the engine continued to buckle despite corrective measures it was shut down. The crew decided to continue on to Dallas, believing the engine could be restarted in case of a crash.

After No. 1 engine was feathered, no attempt was made to transfer that from No. 1 motor tank, resulting in about 1400 lb. more in weight on the left side of the plane than on the right when it crashed in Dallas.

Weather at Love Field was clear with only a 3 mph wind, but the fact to find crash placed the DC-6 to the left of the runway and an "S" turn was made to correct the misalignment. Day after the turn the plane shifted to its left, the crew used chocks abnormally and the DC-6 veered.

► **Ship Steered—At this point** the captain executed power in Nos. 2, 3 and 4 engines in an attempt to maintain control. The ship continued over the runway on a heading about 95 degrees to the left of the landing runway at a low level altitude. Air speed continued to fall the ship's attitude became increasingly nose high, and a stall developed with loss of airspeed and loss of control.

In the few seconds the crash, 25 of the plane's 40 seconds were lifted. Survivors included the captain, first officer and flight engineer.

► **Wreck Procedure—CAR said** that in the first approach the captain did not comply with the speeded approach procedure in an engine-out approach with DC-6 models. The Board is conducting manual analysis that is searching for a better way to use engine inoperative the pilot shall not use more than 10 degrees nose flap and it is possible he will complete the landing.

Despite said this one necessary in order to maintain a suitable three-engine rate of climb. In this case, the flap was extended fully during execution of the "S" turn.

► **Engine Failure**—The faulty fuel management, CAR said it was impossible to compute exactly how much gas remained in No. 4 main tank when the DC-6 was in approach at Dallas. But one apparent fact was the flight engineer saw a warning light flash and the fuel flow meter of No. 4 engine reading zero.

► **Fuel Pressure**—Zero-reading gauge was used both left and right applied to engines Nos. 2, 3 and 4. The captain said No. 4 engine oil was with a "wet" surge of power (intermittent), the left wing dropped and the plane rolled to the right. Just before the crash the No. 4 propeller was first when it was noted that fuel pressure in No. 4 engine was zero.

The flight engineer said his gauge indicated there was about 80 gal of fuel in the No. 4 main tank. However, tests with No. 1 engine cut were said with another DC-6 with about 90 gal. of fuel in the No. 4 main tank—the amount AA had estimated on the wrecked crash by computation.

It was found that a severe leak had caused No. 4 engine to cut out moments before, and with the return of power there was accumulation of the engine coming a left wing low and wing condition. The relatively small amount of fuel in No. 4 main tank moved into the right during the right turn of the crash, which is at the left side of the tank. When the engine recovered with a surge and the plane veered to the left, the imbalance of the fuel was in the No. 4 main tank.

AA said that 1400 lb. of fuel differential in the left tank

TWA Orders Ten More Martin 4-0-4s

A TWA order for ten additional Martin 4-0-4 transports has brought new contracts. Transport purchased during the past several weeks to more than \$17 million.

The Martin transports, to be delivered next year, are in addition to 20 4-0-4s which TWA contracted for in March. Earlier last month, TWA placed a \$500,000 order for six more L-749A Composites, and Eastern Air Lines had placed additional 95-passenger L-1049 jets. Eastern's new aircraft will be 50 million (Aircraft Week May 21).

► **75 on Convair**—TWA purchase of 40 passenger 4-0-4s, which had been ordered in March, was ordered in March. TWA and EAL had options to purchase more of the planes when the original order was announced three months ago. Price per



the nation's first controlled flight, Pioneer Air Lines, started its rising passenger and mail and decreased dependence on mail revenue. It collected its first passenger last month. PAA, for example, over 100,000 passengers between August, 1945, and October last year. Pioneer has 640 more miles serving its routes in 2245 more miles serving 24 aircraft. Pioneer has 640 more miles serving its routes in 2245 more miles serving 24 aircraft. Pioneer has 640 more miles serving its routes in 2245 more miles serving 24 aircraft.

plane at that time was about \$540,000.

Meanwhile, TWA has begun the final flight with leased Martin 23-24 transport. Eight of these planes have been delivered to the carrier, and the remaining four will be available shortly.

CAB Continues

Ban on Sisto

The Civil Aeronautics Board has again denied application of a commercial pilot certificate to Charles R. Sisto, former American Airlines pilot captain whose DC-4 plane crashed half of an outside loop near Mt. Rainier, N.W., Oct. 6, 1947 (Aviation Week Nov. 5, 1948).

CAB, in issuing its decision, stipulated that Sisto should not handle or assist any pilot certificate or rating which would enable him to carry passengers for hire. CAB in its original decision, dated March 24, 1948, had rejected the post hoc mechanism of the DC-4, which caused the violent maneuver ending the flight at 49 passengers and five crew members in a school ship flight Oct. 5, 1947.

SHORTLINES

► **Am Lines (Beth Air Lines)**—Recently increased its all DC-3 fleet to 14 by purchase of an additional plane. Company's overall report showed sharp rise in all-cargo revenue, up \$140,000 over the previous year. Cargo growth has justified the operation of all-flight routes in London and Manchester, and indicates way for further development especially in winter months when passenger traffic declines.

► **BACN**—This month increased its nonstop New York-London services from two to four per week. The extra direct flights will duplicate two New York-San Francisco-London services, and the New York-London route will increase to seven weekly.

► **Civil Aeronautics Administration**—Subcommittee of the industry governs main Airport Use Committee will study air traffic problems in the Washington, D. C., area Sept. 12-14 to determine if improvements can be made to relieve congestion and operational conflict. Similar surveys have been conducted in empty at Minneapolis-St. Paul, Chicago, St. Louis, Jacksonville, New Orleans, Boston, Los Angeles and San Francisco.

► **EAL** All Island National Airlines—Recently celebrated its first birthday and announced plans to put Consolidated in its scheduled routes shortly. The carrier also said it would open new routes from Lydda to Tel Aviv via

Adams and Istanbul, and Lydda to the Union of South Africa via Khartoum.

► **McGraw-Hill**—Reports \$51,951 net profit in July, compared with \$45,618 net profit in the same month last year. Higher passenger and cargo traffic boosted operating revenues \$62,111 over July, 1949, but operating expenses jumped \$70,942. Net profit for the first seven months of 1950 was \$317,574, against \$152,258 in the comparable 1949 period.

► **Northwest**—Has put State Department equipment on its Seattle Anchorage-Alaska run, cutting flying time nearly two hours.

► **Tex American**—Cut more than two hours off its New York-Casaca, Venezuela, round trip when it recently replaced DC-6s with Constellation on the six seven weekly flights.

► **Post Office Dept.**—Plans to advertise for bid on this mail route to be operated between Madison, Ky., Mpls., and Mackinac Island, Mich., during the closed season of water navigation.

► **TWA**—Reported record traffic at Los Angeles on Monday, Aug. 21, when it handled 603 passengers and would have handled more if equipment had been available. . . . Company's payment for converting passenger DC-4s into cargo planes has been delayed by trouble of equipment to the Pacific ports, but five DC-4s now are in international run will undergo modification to fly freight at Kansas City starting Sept. 15.

► **Union**—The Indianapolis-based airline has asked CAB for an exemption to operate between Indianapolis and Cleveland via Richmond, Ind., Dayton, Springfield, Columbus, Miami and Mansfield, D. C., and between Cincinnati and Chicago via Richmond and Columbus. Ted Germany alleged that TWA and Delta Air Lines do not want

to continue service to several communities along these routes. Union also asked temporary authority to serve Gary, Ind.

► **United States** traffic survey showed that last February 1950 had an 11.5 per cent increase in weight ton-miles from a volume standpoint. Next ranking commodities, in order of volume, are machinery and machine parts, wearing apparel, electrical equipment, automotive parts and accessories, dry goods, radios and radio parts, aircraft parts, chemicals and printed matter.

CAB SCHEDULE

Sept. 11—Preliminary conference on Mexican Air Transport in conjunction with the signing of the 1950 Regular air carrier (October 10-11).

Sept. 14—Preliminary conference on re-issuance of Wisconsin Central Airlines Order of Certificate of Public Convenience and Necessity. (October 10-11).

Sept. 18—Hearings on Southern Railway's application for certificate of public convenience and necessity for new service between Atlanta, Ga., and Chattanooga, Tenn. (October 10-11).

Sept. 18—Hearings on hearing in California concerning proposed Texas American Airlines Certificate of Public Convenience and Necessity. (October 10-11).

Sept. 18—Hearings on CAB's investigation of the American Airlines proposed new certificate from Cleveland, Ohio. (October 10-11).

Sept. 18—Hearings on application for certificate of public convenience and necessity for new service between New York, N.Y., and Philadelphia on TWA and American Airlines. (October 10-11).

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"MOST TERRIFIC AIRPLANE I'VE EVER FLOWN"

says PAUL MANTZ, fastest intensity speed and movie pilot, 3-time Bendix Trophy Race winner

"Ryan's way you find that this was the Navion Super 260," continues Mr. Mantz. "I've never seen anything like it in my life. Two minutes to 10,000 feet! That gives you an idea of its placement performance. It's big and powerful. . . . It cruises at 170 mph, yet lands at a snail's pace just 55 mph with full load and no wind. In every way it beats everything I've ever flown. It has both maneuver performance and maximum safety. Anyone can fly it easily and safely. Its high altitude performance is amazing. Stunt-pooling, waterfalls, the radio, interior appointments. . . . everything is perfect. And that sweet-sounding 260 h.p. Lycoming engine! It drives the new H-Course propeller through silent induction gearing at low RPMs for maximum efficiency and reduced noise level."

"The Super Navion is an outstanding in its class as



Fastest Navion's radio-check this with your ear. . . . engine noise is really 'soft like a whisper'—compares that happy landing gear. Give it a starting hand rule on wings—ground!

Rely on Ryan RYAN AERONAUTICAL COMPANY, 400 LINDBERGH FIELD, SAN DIEGO, CALIFORNIA

the P-51 Mustang in among piston-engine fighters. And so wonderful! They're both products of real engineering leadership. With its 1250 fpm rate of climb, fast cruise and 18,000 foot ceiling, the Super Navion has the same 'get up and go' I like so much in my P-51. It gets off like a second jumbojet at just 400 feet. . . . at 770 feet I was over a 50-foot obstacle with full load and no wind. And I found all this in a big, roomy, strong, full-sized two-man airplane that provides the greatest ease of need. Only in the Ryan Super Navion can you find that wonderful combination.

"Never before has there been a plane of such quality. . . . with outstanding performance in every way. . . . a plane so thoroughly reliable and serviceable. To combine all that in full measure is a master accomplishment."

Ryan Navion
NO OTHER PLANE COMBINES
SO MANY FEATURES SO WELL

COPIER STAMP

Religion communities before's suspension of daily flights due to sick riding and airline revenue was \$42,470. By paying the cost of the money-wing craft on a new and stamp.

Nonskeds Must Clean House

Whether the nonskeds realize it or not, new danger signs are flying. It's the public—not the CAB—that must be watched.

Most of you readers know that we have always been a friend of the unscheduled air carrier. From their beginnings, we have contended that their lower fares tapped a new market in passenger transportation, and that the major scheduled lines could learn from some of their traffic economics and lack of faults. We urged the CAB to permit at least some of them to operate, if they operated safely.

Although there have been several accidents on the unscheduled side of the nonskeds, the number has been much less than the established industry expected. The unscheduled nonskeds have a much better safety record than those flying elsewhere.

For months the nonskeds earned magnificent criticism from their flying public. Recently, however, the tide has turned. Some of the carriers and agencies acted bravely in their public relations and services. Whether the percentage of agencies and carriers that really is large or small is not as important as the fact that enough have been guilty to shake public confidence. In this case, the public is beginning to worry more about being misled than about being injured. This is reasonable.

Advertising has been misleading, if not inaccurate. The public is being guaranteed service it is not always getting. And "dispute" are not accidents as often as the carriers and the agencies would have the public believe. There is misrepresentation as to frequency of service, destinations, and types of equipment. High rates are charged in advance for "low priced aircraft" flights that turn out to be flown with big expensive aircraft. Fares range all over the scale. People are kept waiting hours, sometimes days.

North American Airlines Insurance Coverage

AT AN EXTRA CHARGE

Passengers on North American Airlines can now add an additional policy with the same or double the \$100,000 of coverage providing complete liability protection up to \$1,000,000 per person.

Your name on our passenger slips that identify you at the check-in, however, if you so desire, which will lead to any relative to board.

Insurance desired in amount: per person

I am flying on North American Airlines from: to:

My total bill is:

My name is:

My address is:

My phone number is:

Probably the most misleading practice recently has been to confuse the passenger about the type of insurance coverage is offered. One or two carriers, at least have been handing their passengers slips, such as the one reproduced above. The implication is that the

passenger is covered by trip insurance. Actually, in this case, it is the carrier who is insured by the insurance company. To collect, a passenger or his heirs might well be compelled to sue the carrier, or insurance suit. In some states where faultism is in effect, it would be impossible for an injured passenger or his heirs to collect anything approaching \$50,000. There might also be a judgment that the carrier was not guilty of negligence, which would further complicate the problem.

We certainly don't think all of the nonskeds are guilty of sharp business practices. But if any of them continue to mishandle the public in such manner they run the greatest danger of losing the very public confidence and support that has made it so difficult for CAB to close them out of business.

When the nonskeds lose the public support, they will find that the next serious accident may well drag them all down to oblivion. These are loud words, constructive words, but deadly words of warning.

The Railroads' Toll

The next time you hear about the railroad's safety record you might keep in mind that the heaviest figures are the number of train passengers **KILLED** while riding on trains.

You do not hear that in the years 1936 to 1945, in eleven years, there were 31,501 Americans killed by the nation's railroads. In this same period 88,125 were injured.

These figures include passengers, trespassers, travelers not on trains, employees on duty. These categories include grade crossing accidents.

But they are all Americans, killed and injured, those kinds of them, as a result of trains.

Now, you tell us. Suppose aviation started killing 3100 persons each year (roughly the 1949 total for the railroads) and injuring 32,000—whether they were passengers or victims in houses under falling planes or as first employees or trespassers.

Would we American people take the matter as calm as we do the railroad's yearly toll? Why do we fail to consider that this rail toll is new? Why aren't the newspaper headlines shouting these figures from the front pages? Fifty deaths as an airline is top news. Three thousand deaths a year from trains is a figure heard in the Interstate Commerce Commission this last report.

Without attempting in any way to deprive the railroads of credit for their fine passenger safety work, let's remember there is much more to the railroad's overall safety record than meets the casual eye.

—Robert H. Wood

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